UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,503	09/23/2003	Tasuku Sugimoto	117283	1917

25944 7590 05/23/2008

OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER	
NGUYEN, ALLEN H	
ART UNIT	PAPER NUMBER
2625	

MAIL DATE	DELIVERY MODE
05/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/667,503	SUGIMOTO, TASUKU	
	Examiner	Art Unit	
	ALLEN H. NGUYEN	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-31,33 and 34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-16,25-31 and 33* is/are rejected.

7)☐ Claim(s) *17-24 and 34* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 February 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/01/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

- This office action is responsive to the following communication: Amendment filed on 02/04/2008.
- Claims 14-31, 33-34 are currently pending in the application.

Response to Arguments

1. Applicant's arguments filed 02/04/2008 have been fully considered but they are not persuasive.

2. With respect to applicant's argument that "The printing speed of Moriyama is not based on a prediction before the data compression, rather it is based on an actual rate of compression, and thus, Moriyama fails to disclose all of the features of claims 14 and 33."

In reply: The combination of Kita '139 and Moriyama '139 does not explicitly show printing speed determining means for predicting compressed data volume.

However, the above-mentioned claimed limitation is well known in the art as evidenced by Onodera '435. In particular, Onodera '435 teaches printing speed determining means (The image forming method and apparatus performs compression processing 1000, fig. 2) for predicting compressed data volume (i.e., the size of compressed data is predicted before raster data is compressed; col. 3, lines 24-35).

In view of the above, having the combination system of Kita and Moriyama and then given the well-established teaching of Onodera, it would have been obvious to one

having ordinary skill in the art at the time of the invention was made to modify the system of Kita and Moriyama as taught by Onodera to include: Printing speed determining means for predicting compressed data volume, since Onodera stated in col. 1, lines 50-53 that such a modification would ensure the resolution of an image as the object of printing and/or the tone-level representation is degraded, thus the necessary memory capacity and processing time are reduced.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. The information disclosure statement (IDS) submitted on 05/01/2008 has been considered by the examiner.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 14-16, 25-27, 33 rejected under 35 U.S.C. 103(a) as being unpatentable over Kita et al. (US 6,961,139) in view of Moriyama et al. (US 6,646,756), and further in view of Onodera (US 6,181,435).

Regarding claim 14, Kita '139 discloses an image forming device (1, fig. 1) comprising:

image data generation means (12, fig. 1) for generating image data from original data (i.e., an image reading section 12 to generate first image data by optically scanning a document and conducting an optoelectronic converting operation; see col. 1, line 67 to col. 2, lines 1-2);

compression means (13, fig. 1) for compressing the image data generated by the image data generation means (i.e., compression/expansion circuit 13 is a means for compressing the image data obtained in scanner section 12 to generate a compressed image data; see col. 7, lines 10-13);

memory means (14, fig. 1) for storing the image data compressed by the compression means (i.e., Image memory 14, serving as a memorizing means for memorizing data, stores the compressed image data generated by compression/expansion circuit 13; see col. 7, lines 30-32);

decompressing means (Compression/expansion circuit 13, fig. 1) for decompressing the compressed image data stored in the memory means (i.e., Compression/expansion circuit 13 is a means for compressing the image data obtained

in scanner section 12 to generate a compressed image data and for expanding the compressed image data to reproduce the original image data; see col. 7, lines 10-15);

transfer means (CPU 11, fig. 1) for transferring the image data decompressed by the decompressing means to the printing engine (i.e., CPU 11 is a processor for conducting control programs for controlling operating actions of scanner section 12, compression/expansion circuit 13, image memory 14, printing section 15, network interface 16, etc., and serves as a main controlling means as well as a distributed processing control means in the image forming system; see col. 7, lines 64-67 and col. 8, lines 1-2).

Kita '139 does not disclose a printing engine providing a plurality of different printing speed for printing an image on an image recording medium;

printing speed determining means for compressed data volume based on the image data generated by the image data generation means and selecting one of the printing speed among the plurality of different printing speed based on the compressed data volume.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Moriyama '756. In particular, Moriyama '756 teaches a printing engine providing a plurality of different printing speed for printing an image on an image recording medium (i.e., selecting a printing mode according to slow printing velocity when the information content per unit area is large and selecting a printing mode according to fast printing velocity when the information content per unit area is small; see col. 2, lines 55-60);

printing speed determining means (440, fig. 1) for compressed data volume based on the image data generated by the image data generation means (distinguishing data compression rate of the received data, col. 2, line 67) and selecting one of the printing speed among the plurality of different printing speed based on the compressed data volume (i.e., selecting a printing mode according to slow printing velocity when the data compression rate is low and controlling the driving of the printing head at printing velocity according to the selected printing mode to perform printing on the printing medium; and selecting a printing mode according to fast printing velocity when the data compression rate is high and controlling the driving of the printing head at printing velocity according to the selected printing mode to perform printing on the printing medium; see col. 3, lines 1-10).

In view of the above, having the system of Kita and then given the well-established teaching of Moriyama, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Kita as taught by Moriyama to include: A printing engine providing a plurality of different printing speed for printing an image on an image recording medium; printing speed determining means for compressed data volume based on the image data generated by the image data generation means and selecting one of the printing speed among the plurality of different printing speed based on the compressed data volume, since Moriyama stated in col. 1, lines 54-55 that such a modification would ensure a method which proposes high printing quality by improving printing resolution.

The combination of Kita ‘139 and Moriyama ‘139 does not explicitly show printing speed determining means for predicting compressed data volume.

However, the above-mentioned claimed limitation is well known in the art as evidenced by Onodera ‘435. In particular, Onodera ‘435 teaches printing speed determining means (The image forming method and apparatus performs compression processing 1000, fig. 2) for predicting compressed data volume (i.e., the size of compressed data is predicted before raster data is compressed; col. 3, lines 24-35).

In view of the above, having the combination system of Kita and Moriyama and then given the well-established teaching of Onodera, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Kita and Moriyama as taught by Onodera to include: Printing speed determining means for predicting compressed data volume, since Onodera stated in col. 1, lines 50-53 that such a modification would ensure the resolution of an image as the object of printing and/or the tone-level representation is degraded, thus the necessary memory capacity and processing time are reduced.

Regarding claim 15, Kita '139 discloses the image forming device, wherein the original data comprise data expressed in a page describing language (i.e., operations for transferring printing data coded by the PDL (Page description Language), such as the PostScript, etc., to image-forming apparatus 1, which forms images based on the printing data transferred; see col. 8, lines 37-41), and the image data comprise raster data (i.e., the data size of compressed image data, stored in each of compressed image

data areas D1, D2, D3, D4, varies in accordance with the number of pixels; see col. 10, lines 1-5).

Regarding claim 16, Moriyama '756 teaches the image forming device (400, fig. 1), wherein the printing speed determining means (440, fig. 1) determines the printing speed of the printing engine based on the data volume of each raster of the image data to be printed (i.e., the system printing the data including predetermined data compression rate on the printing medium by moving the printing head at printing velocity according to selected printing mode; see col. 3, lines 34-37).

Regarding claim 25, Moriyama '756 teaches the image forming device (400, fig. 1), wherein the printing engine (102, fig. 1) provides at least a first printing speed (1-pass printing mode, Table 1, fig. 5B) and a second printing speed lower than the first printing speed (2-pass printing mode, Table 1, fig. 5A),

wherein the first printing speed is one of a requested printing speed and a maximum printing speed of the printing engine (i.e., the mode selection apparatus 440 includes a plurality of printing modes differing from the maximum printing velocity per page and is able to select one from among the printing modes; see col. 6, lines 35-40), and wherein the predetermined data volume is determined based on a data volume transferable from the memory means to the decompressing means within a printing time period (printing time, see Table 1) for one raster the printing period being determined with a function of the first printing speed (i.e., the receiving buffer 401 of the printing

apparatus 400 receives the data including the predetermined data compression rate according to the selected printing mode form the host computer 500; see col. 6, lines 54-58, fig. 1) and a resolution of the printing engine (i.e., a system can achieve a high density and high resolution recording; see col. 13, line 59).

Regarding claim 26, Moriyama '756 teaches the image forming device (400, fig. 1), wherein the printing speed determining means determines the printing speed of the printing engine on a page by page basis (i.e., the mode selection apparatus 440 includes a plurality of printing modes differing from the maximum printing velocity per page and is able to select one from among the printing modes; see col. 6, lines 35-40).

Regarding claim 27, Kita '139 does not disclose the image forming device, wherein image data generated by the image data generation means comprise color data for performing color image printing based on the color data.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Moriyama '756. In particular, Moriyama '756 teaches the image forming device (400, fig. 1), wherein image data generated by the image data generation means comprise color data for performing color image printing based on the color data (i.e., the carriage 101 is equipped with the printing head unit 103 including the ink tanks for supplying four kinds of color inks and the printing heads for ejecting color inks; see col. 5, lines 14-16).

In view of the above, having the system of Kita '139 and then given the well-established teaching of Moriyama '756, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Kita '139 as taught by Moriyama '756 to include: the image forming device, wherein image data generated by the image data generation means comprise color data for performing color image printing based on the color data, since Moriyama '756 stated in col. 1, lines 25-30 that such a modification would ensure a color ink-jet printing method performs color printing by being equipped with three primary color inks of cyan (C), magenta (M), and yellow (Y) or four kinds of these three primary color inks and black (B).

Regarding claim 33, claim 33 is the method claim of device claim 14. Therefore, method claim 33 is rejected for the reason given in device claim 14.

7. Claims 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kita et al. (US 6,961,139) in view of Moriyama et al. (US 6,646,756), in view of Onodera (US 6,181,435), and further in view of Ohara (US 2002/0071138).

Regarding claim 28, the combination of Kita '139, Moriyama '756 and Onodera '435 does not disclose the image forming device, wherein the printing engine comprises a conveyance section for conveying the image recording medium along a conveying route, a photosensitive body, an exposure section for forming an electrostatic latent

image on the photosensitive body, a developing unit for developing the electrostatic latent image on the photosensitive body, and a drive means for driving the conveyance section, the photosensitive body, the exposure section, and a developing unit,

wherein the transfer means transfers image data decompressed by the decompressing means to the exposure section.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Ohara '138. In particular, Ohara '138 teaches the image forming device (403, fig. 1), wherein the printing engine (200, fig. 3) comprises a conveyance section (conveying system 223, fig. 3) for conveying the image recording medium along a conveying route (i.e., the laser beam emitted from the laser output unit 213 is reflected by a polygon mirror 214 and projected onto the surface of a photosensitive drum 217; see page 4, paragraph [0062], fig. 3), a photosensitive body (a photosensitive drum 217, fig. 3), an exposure section for forming an electrostatic latent image on the photosensitive body (i.e., a light image is irradiated onto the drum surface every separation color, thereby forming a latent image; see page 4, paragraph [0062], fig. 3), a developing unit for developing the electrostatic latent image on the photosensitive body (i.e., developers 219 to 222 is made operative, thereby developing the latent image and forming a toner image onto the photosensitive drum 217; see page 4, paragraph [0063], fig. 3), and a drive means (a charging device 218, fig. 3) for driving the conveyance section, the photosensitive body, the exposure section, and a developing unit (i.e., upon image formation, the photosensitive drum 217 is rotated in the direction shown by an arrow and uniformly charged by a charging device 218, and a

light image is irradiated onto the drum surface every separation color, thereby forming a latent image; see page 4, paragraph [0062], fig. 4),

wherein the transfer means (printer controller 100, fig. 2) transfers image data decompressed by the decompressing means to the exposure section (i.e., the compressed data is decompressed and, thereafter, the decompressed data is transmitted to the image output apparatus 117; see page 1, paragraph [0010], fig. 2).

In view of the above, having the combination system of Kita, Moriyama and Onodera and then given the well-established teaching of Ohara, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the combination system of Kita, Moriyama and Onodera as taught by Ohara to include: the image forming device, wherein the printing engine comprises a conveyance section for conveying the image recording medium along a conveying route, a photosensitive body, an exposure section for forming an electrostatic latent image on the photosensitive body, a developing unit for developing the electrostatic latent image on the photosensitive body, and a drive means for driving the conveyance section, the photosensitive body, the exposure section, and a developing unit,

wherein the transfer means transfers image data decompressed by the decompressing means to the exposure section, since Ohara stated on page 1, paragraph [0005] that such a modification would ensure in the case where data of a host computer is printed from an output apparatus such as a color copier or the like of an electrophotographic system.

Regarding claim 29, Ohara '138 teaches the image forming device (403, fig. 1), wherein a plurality of combinations each including the photosensitive body (217, fig. 3), the exposure section (a charging device 218, fig. 3), and the developing unit (developers 219 to 222, fig. 3) are arranged along the conveyance route (i.e., the toner image is transferred onto a recording material which was fed from a recording material cassette 224 or 225 to the position which faces the photosensitive drum 217 through a conveying system 223 and a transfer drum 227; see page 4, paragraph [0063], fig. 3) for every color different from each other (i.e., a color converter for performing a predetermined arithmetic operation to the dot data of RGB generated by the PDL circuit 111 or converting the dot data into dot data of cyan (C), magenta (M), yellow (Y), and black (K) as colors of toners which are used for forming an image by the color copier as an image forming apparatus; see page 3, paragraph [0051]).

Regarding claim 30, Ohara '138 teaches the image forming device (403, fig. 1), wherein the printing engine (200, fig. 3) comprises a laser engine (a laser output unit 213, fig. 3) including a laser scanner unit performing the scanning operation (i.e., reference numeral 108 denotes the data controller for managing data transmission and reception between the devices in the printer controller 100 in order to perform the printing operation or scanning operation by the color copier connected to the host computer; see page 3, paragraph [0047], fig. 2), the data of the raster being transferred from the transfer means (printer controller 100, fig. 2) to the laser engine on a raster-by-raster basis (i.e., the conversion into the CMYK raster image data by the color converter

112; see page 8, paragraph [0125]) in synchronism with the scanning operation (i.e., the sync signal generator 301 generates various timing signals such as line sync signal LSYNC, main-scan valid interval signal VE and sub-scan valid interval signal PE of the image signal; see page 4, paragraph [0069], fig. 5).

Regarding claim 31, the combination of Kita '139 and Moriyama '756 does not disclose the image forming device, wherein the compression means compresses image data through JPEG using a non-reversible compression DCT method.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Ohara '138. In particular, Ohara '138 teaches the image forming device, wherein the compression means compresses image data through JPEG using a non-reversible compression DCT method (i.e., reference numeral 115 denotes a second data compressor for performing a JPEG compression to the dot data of C, M, Y, and K generated by the color converter 112; see page 3, paragraph [0055], fig. 2).

In view of the above, having the combination system of Kita '139 and Moriyama '756 and then given the well-established teaching of Ohara '138, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the combination system of Kita '139 and Moriyama '756 as taught by Ohara '138 to include: the image forming device, wherein the compression means compresses image data through JPEG using a non-reversible compression DCT method, since Ohara '138 stated on page 1, paragraph [0009] that such a modification would a method whereby a compression (compressing process) is performed to pixel data, the

compressed data is stored in the bit map memory, and the data is sequentially transmitted to the color copier while performing a decompression (decompressing process).

Allowable Subject Matter

8. Claims 17-24, 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 17, the prior art of the record (Kita et al. (US 6,961,139) in view of Moriyama et al. (US 6,646,756), and further in view of Onodera (US 6,181,435)) fails to show the image forming device, wherein the printing speed determining means predicts the compressed data volume from an entropy of the image data to be printed.

Regarding claims 18-24, 34, claims 18-24, 34 are dependent on claim 17. Therefore, claims 18-24, 34 are objected for the reason given in claim 17.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mishima (US 2001/0007595) discloses coder, coding method, program, and image forming apparatus for improving image data compression ratio.

Gormish et al. (US 5,689,589) discloses data compression for palettized video images.

Wakana (US 7,271,923) discloses image processing using processing by bands and fixed-size work buffer.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALLEN H. NGUYEN whose telephone number is (571)270-1229. The examiner can normally be reached on M-F from 9:00 AM-6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on (571)-272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/King Y. Poon/
Supervisory Patent Examiner, Art Unit 2625

/A. H. N./
Examiner, Art Unit 2625